

REMARKS/ARGUMENTS

Claims 1-19 were rejected as being unpatentable over Raboin et al. (USPN 6,547,189; "Raboin") in view of Taylor (USPN 6,439,508; "Taylor") pursuant to 35 USC 103(a), which states:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title [35 USCS § 102], if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Office Action - Rigid Walled Structure

Raboin (Column 6, lines 55-66) is referenced in the Office Action as disclosing a human habitat system having a rigid walled housing. The reference is reproduced below.

55 As best seen in FIGS. 3 and 4, structural core 100 is preferably generally cylindrical in shape and includes a longitudinal axis 101. In addition, structural core 100 is preferably composed of, or preferably includes, at least one longeron 102, at least one body ring 104, two endplates 106,
60 and two end rings 116. The two endplates 106 correspond to the circular ends of the structural core's 100 cylindrical shape. Each longeron 102 extends in a direction parallel to the longitudinal axis 101 of the cylindrical shape and is fixedly attached to one of the two end plates 106. Each body
65 ring 104 is fixedly attached to each longeron 102.

Corresponding to the ends of the structural core's 100 cylindrical shape, each end plate 106 is circular in shape.

The excerpt from Raboin addresses the internal core structure of the inflatable craft. The structural core is a solid unit comprised of longerons 102, body rings 104, and endplates 106. These structures are associated with solid elements. This passage does not address the flexible shell of the craft, but rather the supporting core.

Fig. 4 is especially clear on the solid structural nature of the core as shown below.

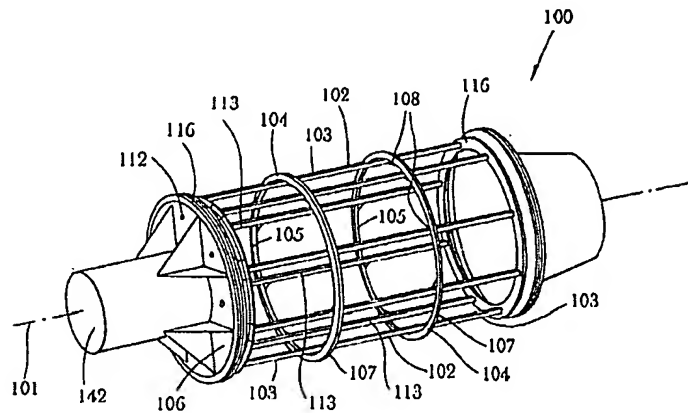


Fig. 4

However, this structural core is distinct from the flexible outer layers. This distinction is identified in Column 2 of Raboin:

To achieve such objectives, the invention includes a module that generally comprises a structural core and an inflatable shell. The inflatable shell is searingly attached to the structural core. In its pre-deployment or launch configuration, the interior and thickness of the inflatable shell may be collapsed by vacuum. Also in this configuration, the inflatable shell may be efficiently folded around the structural core, and for space flight, the module may be loaded into the payload bay of an existing launch vehicle, such as the Space Shuttle. On location, in orbit for example, the module is deployed, the inflatable shell is inflated, and the module achieves its deployed configuration. In its deployed configuration, the thickness of the inflatable shell automatically expands from its collapsed state to its full thickness, and the inflatable shell is inflated around the structural core, defining therein a large volume useable, for example, as habitable space for astronauts. A plurality of removable shelves may be arranged interior to the structural core in the pre-deployment or launch configuration. The structural core may also include at least one longeron that, in conjunction with the shelves, primarily constitute the rigid, strong, and lightweight load-bearing structure of the

While the core is structural and can be solid, the external inflatable shell is malleable. This distinction necessarily flows from the fact that the Raboin reference addresses an inflatable craft. The use of a solid external shell would undermine the Raboin invention.

Office Action - Simulator

Taylor was relied upon for the proposition that it would have been, “obvious to one of ordinary skill in the art to modify the human habitat system described in Raboin, by testing the system in a simulated environment, in order to discover necessary modifications before actual deployment.” The excerpt of the Taylor patent as referenced in the Office Action appears below.

³⁵ A second part of the present invention includes the inventor’s enhancements to the NASA TransHab Concept. The NASA device was fabricated in a prototype design and tested in a large vacuum chamber but used a simple design not generally used in the composite industry.

While the reference does identify a prototype design, it is clear that the inventor is referring to a prototype of the inflatable shell TransHab concept. The inventor admits the design was simple and was, “not generally used in the composite industry.” Composites are associated with solid materials. What is referenced by Taylor is a flexible shell (not a composite), which was the type of shell used in the TransHab design. It was the inflatable shell that gave TransHab its unique character as referenced often in Raboin.

In further reference to this passage, the simulation that is being performed is on the inflatable shell structure of the TransHab in a vacuum chamber. The present invention does not address any vacuum chamber testing of an inflatable shell TransHab type prototype design.

In contrast, the instant invention does not deal with an inflatable shell prototype, but rather a simulator having a solid shell.

Motivation to combine

Obviousness is a legal conclusion based on underlying facts of four general types, all of which must be considered by the trier of fact: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) any objective indicia of nonobviousness (failure of others, copying and unexpected results). Graham v. John Deere Co., 383 U.S. 1, 17-18, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). It is well-established that before a conclusion of obviousness may be made based on a combination of references, there must have been a reason, suggestion, or motivation to lead an inventor to combine those references. ACS Hosp. Sys., Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933. Pro-Mold and Tool Co., Inc. v. Great Lakes Plastics, Inc., 75 F.3d 1568, *1573 (C.A.Fed. (Ohio), 1996). "When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references." In re Rouffet, 149 F.3d 1350, 1355, 47 U.S.P.Q.2D (BNA) 1453, 1456 (Fed. Cir. 1998) (citing In re Geiger, 815 F.2d 686, 688, 2 U.S.P.Q.2D (BNA) 1276, 1278 (Fed. Cir. 1987)). The same principle applies to invalidation." Ecolochem, Inc. v. Southern Cal. Edison Co., 227 F.3d 1361, 1372 (Fed. Cir. 2000). In the present case, the Raboin and Taylor references are used in concert to support the obviousness rejection. However, neither reference teaches, or even suggests, the invention of a solid shelled simulator based upon certain characteristics of a TransHab type flexible shelled spacecraft.

There is no motivation to combine where the modification would render the reference inoperable for its intended use. McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1354 (Fed. Cir. 2001) (adding finger marks to secondary reference of a baseball to arrive at an instructional pitching device would render the baseball unusable for its intended purpose). In Taylor and Raboin the spacecrafts have flexible outer layers. By

requiring the outer layers to be solid, the Raboin and Taylor inventions would not be able to be compressed to fit into a fairing before launch and subsequently inflated to a larger volume. These are two critical aspects to the Raboin and Taylor inventions. Such a transposition would render Raboin and Taylor inoperable for their respective intended uses.

To reject an inventor's claim for obviousness in view of a combination of prior art references, a showing of a suggestion, teaching, or motivation must be, "clear and particular". In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Neither reference discusses the case of a simulator having a solid outer shell based upon characteristics, such as deployment size, of an inflatable shell craft similar to the TransHab concept. None of the prior art references shows or suggests the properties and results of the claimed structure, or suggests the claimed combination as a solution to the problem of a simulator for an inflatable spacecraft. See In re Wright, 848 F.2d 1216, 1220, 6 USPQ2d 1959, 1962 (Fed. Cir. 1988).

The mere fact that references may be modified or combined does not make the modification or combination obvious unless the prior art suggested the desirability of the modification or combination. In re Fritch, 972 F.2d 1260, 1266 (Fed. Cir. 1992). Neither Raboin nor Taylor suggests the need for a hard shelled simulator based upon characteristics of a flexible shelled craft.

Regarding claim 2, Raboin discloses a flexible shelled system with a longeron. However, as discussed supra, the combination of the longeron with a simulator having a solid shell is not identified in Raboin.

Regarding claim 3, Raboin discloses a flexible shelled system with a window. However, as discussed supra, the combination of the window with a simulator having a solid shell is not identified in Raboin.

Regarding claim 4, Raboin discloses a flexible shelled system with an opening through the second distal enclosure. However, as discussed supra, the combination of the opening through a second distal enclosure with a simulator having a solid shell is not identified in Raboin.

Regarding claim 5, Raboin discloses a flexible shelled system with a debris shield. However, as discussed supra, the combination of the debris shield with a simulator having a solid shell is not identified in Raboin.

Regarding claim 6, Raboin discloses a flexible shelled system with a plurality of water bags. However, as discussed supra, the combination of the water bags with a simulator having a solid shell is not identified in Raboin.

Regarding claim 7, Raboin discloses a flexible shelled system with a floor structure and means for supporting the floor structure and the floor structure extending substantially the length of the longitudinal axis and substantially dividing the internal volume into an upper internal space and a lower internal space. However, as discussed supra, the combination of a floor structure and means for supporting the floor structure and the floor structure extending substantially the length of the longitudinal axis and substantially dividing the internal volume into an upper internal space and a lower internal space with a simulator having a solid shell is not identified in Raboin.

Regarding claim 8, Raboin discloses a flexible shelled system with an access opening. However, as discussed supra, the combination of the access opening with a simulator having a solid shell is not identified in Raboin.

Regarding claim 9, Raboin discloses a flexible shelled system with a plurality of floor structures, means for supporting the plurality of floor structures and the plurality of floor structures extending substantially the length of the longitudinal axis and substantially dividing the internal volume into a plurality of internal spaces. However, as discussed supra, the combination of a plurality of floor structures, means for supporting

the plurality of floor structures and the plurality of floor structures extending substantially the length of the longitudinal axis and substantially dividing the internal volume into a plurality of internal spaces with a simulator having a solid shell in not identified in Raboin.

Rearding claim 10, Raboin discloses a flexible shelled system with an access opening in at lease one floor structure. However, as discussed supra, the combination of the access opening in at least one floor structure with a simulator having a solid shell in not identified in Raboin.

Rearding claim 11, Raboin discusses the cylindrical aspect of the invention, but does not address a plurality of cylinders disposed within and fixedly attached to, the first distal enclosure. Even so, as discussed supra, the combination of a plurality of cylinders disposed within and fixedly attached to the first distal enclosure with a simulator having a solid shell in not identified in Raboin.

Rearding claim 12, Raboin discusses the cylindrical aspect of the invention, but does not address a plurality of cylinders disposed within and fixedly attached to, the second distal enclosure. Even so, as discussed supra, the combination of a plurality of cylinders disposed within and fixedly attached to the second distal enclosure with a simulator having a solid shell in not identified in Raboin.

Rearding claim 13, Raboin discusses the cylindrical aspect of the invention, but does not address a plurality of cylinders disposed along, fixedly attached to, the external surface of the first distal enclosure. Even so, as discussed supra, the combination of the access opening in at least one floor structure with a simulator having a solid shell in not identified in Raboin.

Rearding claim 14, Raboin discusses the cylindrical aspect of the invention, but does not address a plurality of cylinders disposed along, and fixedly attached to, the

external surface of the second distal enclosure. Even so, as discussed supra, the combination of a plurality of cylinders disposed along, and fixedly attached to, the external surface of the second distal enclosure with a simulator having a solid shell in not identified in Raboin.

Rearding claim 15, Raboin discusses panels, but does not address simulated panels. Even so, as discussed supra, the combination of simulated panels with a simulator having a solid shell in not identified in Raboin.

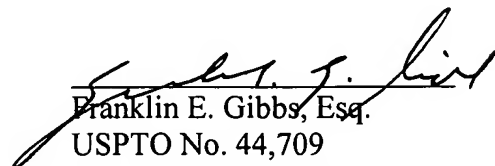
Rearding claim 16, Raboin discusses the cylindrical aspect of the invention, but does not address a plurality of cylinders fixedly attached to the internal surface. Even so, as discussed supra, the combination of a plurality of cylinders fixedly attached to the internal surface with a simulator having a solid shell in not identified in Raboin.

Applicant believes the application is now in a condition for allowance and Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

If the Applicant's attorney can be of any further assistance, please call the undersigned at the number provided.

Respectfully submitted,

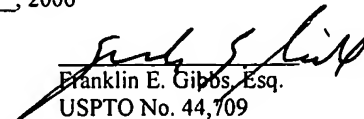
Dated: June 1, 2006


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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as required for Express Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on: June 1, 2006

Dated: June 1, 2006


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